



Application Date: April 13, 1933. No. 11,050/33.

Complete Left: April 13, 1934.

Complete Accepted: Aug. 9, 1934.

PROVISIONAL SPECIFICATION.

**Improvements in Electric Lamp Holders.**

I, HENRY ROTTENBURG, of 5, Adams Road, Cambridge, British Subject, do hereby declare the nature of this invention to be as follows:—

5 The object of this invention is to provide a holder for electric lamps which will hold two sets of lamps or bulbs, one set of low candle power and one set of normal candle power, together with a mechanism which will switch into the lamp circuit the two sets of lamps alternately; in other words a mechanism which every time the current is switched on or off alters the connections in the holder so that each time the current is switched on the set of lamps lights up which was not alight the previous time the current was switched on.

20 This arrangement is achieved by incorporating in the lamp holder an electromagnet which is energized each time the

current is switched on to the lamp holder and when energized attracts a piece of iron the movement of which actuates a switching device such for instance as a ratchet-operated drum type commutator, so that each time the current is switched on, or alternatively each time the current is switched off, the connections to the lamps are changed so that each time the current is switched on the set of lamps lights up which was not previously alight.

In the case of alternating current the electromagnet and the piece it attracts may be made up of laminations and the winding on the magnet may then be used as a transformer to supply a lower voltage to one set of lamps and a higher voltage to the other set of lamps.

Dated this 13th day of April, 1933.  
HENRY ROTTENBURG.

COMPLETE SPECIFICATION.

**Improvements in Electric Lamp Holders.**

40 I, HENRY ROTTENBURG, of 5, Adams Road, Cambridge, a British Subject, do hereby declare the nature of this invention and in what manner the same is to be performed, to be particularly described and ascertained in and by the following statement:—

45 This invention relates to holders for electric lamps and is particularly concerned with holders which can accommodate two or more such lamps.

50 It is often desirable to have available lamps of two different powers so that when intense illumination is not desired a high powered lamp can be switched off and replaced by a relatively low powered lamp. In some cases, for instance when used as a night light or for illuminating corridors, lamps of very small power are satisfactory, and in such cases these lamps cannot be made to run off the full supply voltage of the mains.

60 It is therefore the main object of the present invention to provide a holder which will accommodate a main lamp and a subsidiary lamp, the latter of which is

adapted to be supplied from a lower voltage than the full voltage of the mains.

70 Thus, according to the present invention, an electric lamp holder containing a switch for closing the circuits of a number of lamps in turn has an alternating current transformer housed in the holder and connected to supply different voltages for the lamps and also constructed so as to act as an electromagnet which actuates the switch each time the supply circuit to the primary winding of the transformer is closed or each time it is opened. It is preferred to shift the switch upon interruption of the supply circuit as there is no appreciable tendency to sparking under such conditions. This may be effected by mounting a pawl on an armature of the electromagnet co-operating with the transformer core in such a relation to a ratchet wheel that the latter is turned through the angle corresponding to one tooth each time the armature is allowed to fall away from the core.

85 In the most convenient and practical form of the apparatus, the holder carries

BEST AVAILABLE COPY

two sockets one for a relatively high power lamp adapted to run off the full mains voltage and the other to receive a low voltage small power lamp; in this case the transformer may be an auto-transformer and then one connection to the low voltage socket will be taken from a tapping point in the transformer winding.

In order that the invention may be clearly understood and readily carried into effect, an example of construction in accordance with it will be described with reference to the accompanying drawings, in which:—

Figure 1 is a side elevation of the holder with two lamps in position and showing the casing of the holder in section;

Figure 2 is a plan view of the holder removed from the top cover plate, and

Figure 3 is a simplified diagram of connections.

Referring first of all to Figures 1 and 2, the main casing of the transformer is shown at *a*, and in the particular example illustrated is moulded from synthetic moulding composition. It is secured to the cover plate *b* by screws *c* and contains the transformer *d* which is an auto-transformer with a single winding *e* and is arranged also to act as an electromagnet. For this purpose the magnetic circuit of the core is closed through a pivoted armature *f*, normally held away from the core *d* by a coil tension spring *g*.

The step-by-step switch is in the form of a face type commutator switch *h* mounted on a metal pin *k* attached to a metal bracket *l* which is screwed to a boss *m* which stands up from the lower wall of the casing *a*. The commutator *h* consists of alternate conducting and insulating sections, and it co-operates with two brushes or fingers *n* and *o*, one of which is in contact with a conducting segment and the other with an insulating segment in any position of the switch. The latter is actuated by a spring pawl *p* carried on and standing up from the armature *f*. Definite positioning of the switch disc is secured by a check pawl *q* also screwed to the boss *m*.

The socket *r* for the main lamp *s* is attached to the case *a* by means of two hollow rods *t* of metal or insulating material, through each of which runs one of the insulated conductors to the lamp *s*. The socket *u* for the subsidiary lamp *v* is mounted direct on to the lower part of the case *a*, so that the lamp *v* is located within the stirrup formed by the rods *t*.

The wiring or connections for the two lamps is best shown in Figure 3, in which the reference letters correspond to those in Figures 1 and 2. It will be appreciated

that the conducting segments of the commutator disc *h* are all connected to the central pin *k* which is connected by a conductor *w* to a main supply lead on the lamp side of the tumbler switch *y*. The main lamp *s* is connected on one side to the other main lead *x*<sup>1</sup>, and on the other side to the switch finger *n*; the subsidiary lamp *v* is connected on one side to the transformer tapping *z* and on the other side to the switch finger *o*.

If, in the position shown in Figure 3 the switch *y* is closed, the main lamp *s* will light up, because the finger *n* is on a conducting segment, the circuit being through switch *y*, conductor *w*, finger *n* through the lamp *s* and back to the supply lead *x*<sup>1</sup>. On opening the switch *y* the armature of the transformer *d* moves the disc *h* one step clockwise, so that the finger *n* then rests on an insulating segment and the finger *o* on a conducting segment. Thus, when the switch *y* is next closed, the small lamp *v* lights up because it is connected by the finger *o* across the section of the transformer winding *e* to the rod of the tapping *z*.

The invention is not limited to a holder for two incandescent lamps, for the small power lamp particularly, might be a gas filled discharge lamp. In the latter case it might require a voltage higher than that of the mains, and then the transformer *d* would be designed accordingly. Actually neither lamp might run directly from the mains voltage in which event the transformer would provide the two or more desired voltages for the lamps. Further, it will be understood that while a particular form of pawl and ratchet switch operated by an electromagnet has been described, the invention is not limited to this particular construction. The electromagnet may in fact serve to effect the opening or closing of the contacts of any suitably designed switch such, for example, as a two way switch having one terminal common to two lamp circuits and separate contacts connected to the respective lamps. If more than two lamps of different powers are employed, the number of separate contacts may be increased accordingly.

Having now particularly described and ascertained the nature of my said invention and in what manner the same is to be performed, I declare that what I claim is:—

1. A holder for a number of electric lamps, containing a switch for completing the circuits of the lamps in turn, in which an alternating current transformer for providing different voltages for the lamps is mounted in the holder and is also arranged to serve as an electromagnet

which actuates the switch at each closure or interruption of the supply circuit to the transformer.

5 2. A holder according to claim 1, in which an armature actuated by the transformer core carries a pawl which turns a ratchet wheel step-by-step so as to move on the switch at each interruption of the supply of the transformer.

10 3. A holder according to claim 1, arranged with two sockets to receive respectively a high voltage, high power lamp and a low voltage lamp and with one terminal of the low voltage socket con-

nected to a tapping point in the transformer winding. 15

4. A holder for two incandescent electric lamps furnished with a transformer serving also as an electro-magnet for actuating a step-by-step switch, substantially as described with reference to the accompanying drawings. 20

Dated this 13th day of April, 1934.

For the Applicant:

GILL, JENNINGS & EVERY-  
CLAYTON,

Chartered Patent Agents.

51/52, Chancery Lane, London, W.C. 2.

Redhill: Printed for His Majesty's Stationery Office, by Love & Malcomson, Ltd.—1934.

BEST AVAILABLE COPY

Fig. 1.

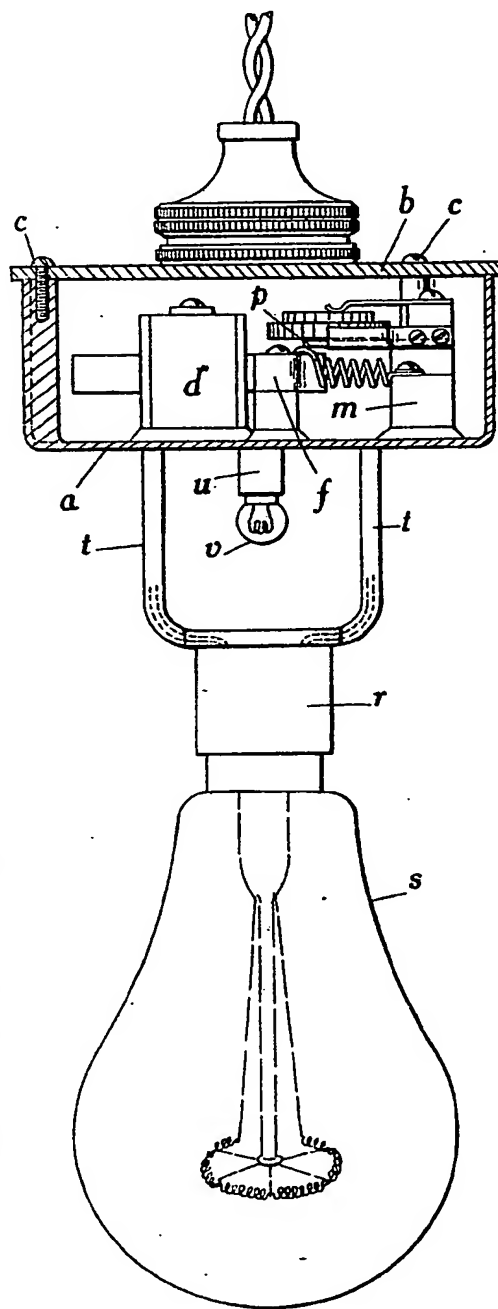


Fig. 2.

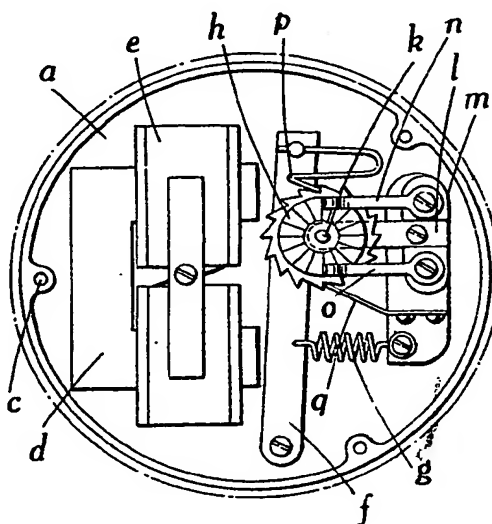
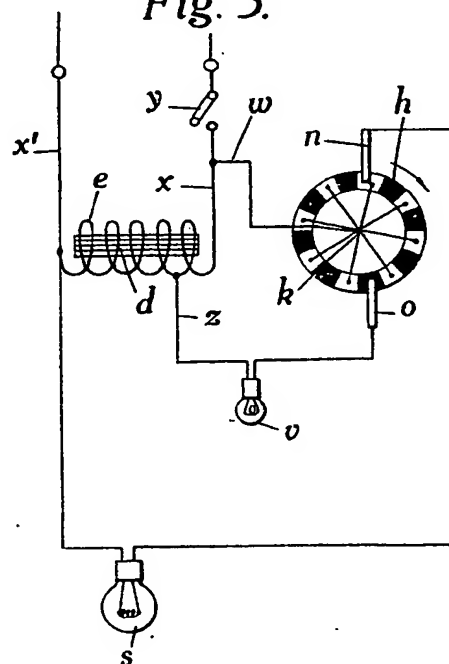


Fig. 3.



Malby &amp; Sons, Photo Litho.

BEST AVAILABLE COPY